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ABSTRACT

A study was conducted at Kirkwood Community College (KCC) to determine whether three groups of "high risk" students had a higher rate of attrition than the general student population. The study sought to test whether the three groups identified from an earlier study as being "high risk" in terms of attrition (i.e., students who changed major in the first year of enrollment; students who dropped classes without adding classes; and female students who were non-career majors, part-time, and over 30 years of age) were more likely to become non-persisters than the general student population. A random sample of 252 students was selected from the 38,556 students who had been enrolled at KCC during the three years prior to September 1984. Study findings revealed: (1) the small size of the sample of female, non-career major, part-time, and 30 years of age or older and students who had changed major in their first year precluded meaningful comparison with the general student population; and (2) analysis of additional data indicated that the "high risk" groups were not more likely to become non-persisters than the general student population. (HB)

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A COMPARISON OF ATTRITION RATES FOR THREE HIGH-RISK STUDENT POPULATIONS AND THE GENERAL STUDENT POPULATION AT KIRKWOOD COMMUNITY COLLEGE

APPLIED EDUCATIONAL RESEARCH
AND EVALUATION

by

Julius O. Koefoed, Jr., M.P.A.

Kirkwood Community College

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A PRACTICUM PRESENTED TO NOVA UNIVERSITY
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DEGREE OF DOCTOR OF EDUCATION

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ABSTRACT

The purpose of this study was to test three hypotheses which had been developed as a result of an earlier study. The hypotheses were that three groups of students, called "high risk" groups, would have a higher rate of attrition than would the general student population. The three "high risk" groups were: students who changed majors during their first year of enrollment; students who dropped classes without adding classes; female students who were non-career majors, part-time and over thirty years of age.

A random sample was taken from the total student population enrolled at Kirkwood Community College during the past three years. The individual student records were examined. According to the official records, the student was then catagorized as either one of the "high risk" groups or a member of the general student population. The data, which included attrition or completion information, were then coded. These data were then input to an Apple IIe microcomputer and the data were manipulated.

A frequency distribution revealed that the group that was female, non-career major, part-time, and thirty years of age or older comprised less than two percent of

the sample. The group of students who changed majors during their first year of enrollment comprised less than ten percent of the sample. Therefore, the outcome of the analysis indicated that any effort directed at these groups might not be cost effective due to the small numbers involved.

The author's analysis of the additional data generated indicated that the "high risk" groups were not more likely to become non-persisters, or attrition statistics, than the general student population. Therefore, the Null Hypotheses were accepted.

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THE STATEMENT OF THE PROBLEM

According to a memorandum from Dr. Donald Page, Dean of Educational Services, Kirkwood Community College experienced an increase in attrition from 33.1% for the Fall Quarter, 1979, to 33.4% for the Fall Quarter, 1980. The Vice President for Instruction expressed interest in the problem of attrition because no research had been conducted in that area at the College since the report issued by Dr. Page, in 1980.

The author completed a research project, in early 1984, which identified three student sub-groups of the general student population at the College who appeared to be in "high-risk" of becoming "non-persisters." (Koefoed, 1984:26-28). The three "high-risk" student groups which the author identified, and which were examined in this study, were as follows:

1) Females, non-career majors, part-time, thirty years old or older.

2) Students who dropped classes without adding a equivilant number of credit hours.

3) Students who changed their major during their first year of enrollment.

The attrition rates for these three student groups were compared against that of the general student population at the College to test the hypothesis that they are truly "high-risk."

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THE HYPOTHESES

HYPOTHESIS ONE - Students who are female, non-career majors, part-time, and thirty years old or older, would have a higher rate of attrition than the general student population.

HYPOTHESIS TWO - Students who dropped classes without adding classes of equivilant credit hours would have a higher attrition rate than the general student population.

HYPOTHESIS THREE - Students who changed their major during their first year of enrollment would have a higher attrition rate than the general student population.

NULL HYPOTHESIS ONE - Students who are female, non-career majors, part-time, and thirty years old or older, would have an attrition rate that was no different from the attrition rate of the general student population.

NULL HYPOTHESIS TWO - Students who dropped classes without adding courses of equivilant credit hours would have an attrition rate that was no different from the attrition rate of the general student population.

NULL HYPOTHESIS THREE - Students who changed their major during their first year of enrollment would have an attrition rate that was no different from the attrition rate of the general student population.

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BACKGROUND AND SIGNIFICANCE OF THE STUDY

In view of the trend towards declining enrollments in higher education across the country, certain administrators at Kirkwood Community College were quite concerned about the apparently high rate of attrition for students between the first and second year of enrollment at the College. Several activities have been undertaken in an attempt to find the causes, and attempt to avoid this trend at Kirkwood Community College.

The College's administrators allocated resources for the creation of an Arts and Sciences Advising Center to more effectively aid students in course selection. The Student Services Division of the College initiated the process of conducting exit interviews with students who had gone through the formal process of withdrawing from the College in an effort to ascertain their reasons for not persisting. The Vice-President for Instruction authorized, and encouraged, scientific educational research that attempts to locate causes for student attrition, and postulates potential solutions.

The Dean of the Arts and Sciences Division is in the midst of research examining the reasons for non-completion among full-time Arts and Sciences students. The author recently completed a research practicum on

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selection of major course of study and its effect on program completion rates. It was the author's earlier research which gave rise to the hypotheses which were tested during this study.

A review of the literature indicated that "...all types of students, including those of serious intellectual interest and high academic ability, withdraw from the comprehensive community college." (Jones, 1972:45). The identification of the student persister is difficult because the persister has various and multiple personality traits. The student who drops out, or fails to persist also exhibits similiar variances in personality and character traits. (Koefoed, 1984:7).

In an attempt to stem the tide of attrition, many colleges have tried to predict academic achievement through cognitive criteria, such as previous academic achievement, and achievement test scores. However, mounting evidence questions their validity, especially for community college students. (Griffin, 1978:14). Kirkwood does not use any entrance screening devices, and all who apply are admitted.

The steady growth of Kirkwood Community College, both in enrollments and class size, may be a contributing factor to the attrition problem at Kirkwood Community College. Because, as one study indicated, the smaller the school, and the smaller the class size, the higher the

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retention rate. (Blai, 1972:1-23). The new student, who comes from the lower third of his or her high school class, (Cross, 1974:18), and who is not identified as such by the College's Admissions Office personnel, may be part of the attrition problem. In addition, the non-traditional students, who are older and who may have different goals, (Rouesche, 1974:63), may be part of the attrition problem, as well, because both of these student groups may be among those students who have "...a poor self-concept (and) little faith in his or her ability. They are often afraid to attempt a learning task. If they do, the level of achievement is low." (Griffin, 1978:8). Kirkwood Community College does not identify these students because the College's policy is to not screen incoming, or continuing, students by any cognitive or achievement oriented criteria.

Indicators of student accomplishment are many, but predictors of student success are few. However, selection of a career-oriented major was tested by the author in an earlier study and found to have predictive value. The student who selected a career-oriented major was ten times more likely to graduate than were those students who selected non-career majors. (Koefoed, 1984:22). The selection of this career-oriented major may indicate an attitudinal awareness which could effect future performance (Stock, 1977:73) and this enhances major

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selection as a predictor.

The author hypothesized that the three groups identified as "high-risk" students will probably become "non-persisters." If these students could be identified earlier, then the resources of the College could be utilized to assist them with their problems and perhaps enhance their academic progress. This effort might also prevent their becoming attrition statistics. The results of this study are being integrated into the larger, college-wide body of knowledge developed from a recent Master Planning exercise, and recommendations for action have been generated.

The testing of these hypotheses was an application of inferential statistics, and therefore was relevant to the Applied Educational Research and Statistics core module. The results are meaningful to the College because the results identify the current attrition rate of the general student population. The results will also aid in the development of a comprehensive program of College activities intended to increase student retention and thereby reduce student attrition. Further, the findings of this study contribute to the body of knowledge on student attrition, retention, and the ability to make predictions of persistence in academic endeavors.

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DEFINITIONS OF TERMS

The following are the operational terms which were utilized in the conduction of this study. The operational definition is the most explicit method to clarify meanings for both author and reader, (Babbie, 1980:70), and is intended to accomplish this, and nothing further:

HIGH-RISK STUDENT - one hypothesized by the author as having a higher probability of not persisting than the general population of students.

PART-TIME STUDENT - one who was registered for 11 quarter credit hours, or less, of coursework in a single quarter.

FULL-TIME STUDENT - one who was registered for 12, or more, quarter credit hours of coursework in a single quarter.

PERSISTER - one who graduated from a diploma, certificate or degree program, or who was still currently enrolled, or who had been enrolled within the past three quarters.

ACTIVE FILE - the computer-retained list of all students' names and social security numbers which is used to access the location of their transcripts on microfiche. A student's record will be maintained in this active file for a period of three years from the date of the last

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activity which caused a change to the student's official transcript or demographic record. A paper printout is generated quarterly for use by Registrar's Office personnel. (Napier, 1984).

CAREER-ORIENTED MAJOR - all majors in the Vocational-Technical Division, and all majors on the Arts and Sciences majors list, (Appendix B), with the exceptions of: 10104-Liberal Arts, 10118-Pre-Historical Science, 10122-Pre-Music, 10137-English as a Second Language, 10139-Other, and 10140-Undecided.

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LIMITATIONS OF THE STUDY

The study was limited to the student population at Kirkwood Community College.

The study was limited to examination of a few student characteristics selected by the author.

The study was limited to the inferences which can be drawn from data.

The study was limited in that the students who transfered to other institutions were not identified in any viable, reliable manner that would have eliminated them from classification as non-persisters.

The study was limited in that the author had no empirical knowledge of reasons why the individual student in the sample might have chosen to non-persist.

The study was limited to a sample size that was manageable, but which may have been less than optimal.

The study was limited in that the sample did not include any students from the College's inactive record file.

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BASIC ASSUMPTIONS

It was assumed that the information on the official transcript was accurate.

It was assumed that the sample population was representative of the population from which it was drawn.

It was assumed that the student population contained a normal distribution of intelligence and academic ability.

It was assumed that the random number sampling technique which was utilized provided a sample which closely approximated the distribution of characteristics in the general population.

It was assumed that students who registered for academic credit coursework intended to successfully complete the courses for which they enrolled.

It was assumed that all students had an equal opportunity to complete their college program.

It was assumed that all students who enrolled at Kirkwood Community College intended to earn a diploma, certificate, or degree.

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PROCEDURES FOR COLLECTING DATA

The source from which the primary data was drawn was student transcripts from the active file. The active file contained 252 pages of names, and social security account numbers. Each page had three columns of fifty-one names, or a total of 153 names. The total number of records which were maintained in the active file was 38,556, as of September 1, 1984.

The author utilized a random number table to draw one name from each of the 252 pages in the listing of the active file. This provided a sample size of 252. Each name referenced a transcript. The transcript was accessed manually and the student's record examined. If the student fit one of the three catagories which the author identified and labeled as "high-risk," his or her record was coded in accordance with the code sheet, (Appendix A). The data which was coded included: sex, age, major, full-time or part-time, number of quarters registered, plus the answers to the following questions:

1) Was the student a member of a high-risk group?

2) Which group?

3) Was the student a persister, or non-persister?

If the student was not in one of the author's high-risk catagories, then his or her record coded as a

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member of the general population, and the transcript was examined to ascertain if the student was a persister or non-persister. The data were coded in accordance with the code book, (Appendix A).

The sample was collected and coded during the period of September 6, 1984 - September 25, 1984, by the author with the assistance of a paid research assistant, Jan Chittick. Using a random number table, the author checked ten of the sample cases coded by the research assistant, no coding errors were noted. The author, therefore, in accordance with the practicum proposal, assumed that the remainder of the data were accurate.

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PROCEDURES FOR TREATING DATA

After the data were collected, the data were input into an Apple IIe microcomputer utilizing A-Stat, a computerized statistical analysis software package based upon Princeton University's P-Stat. Once it had been input, it was subjected to preliminary analysis and a frequency distribution was generated.

The author then caused the microcomputer to generate certain tables and calculate Chi-Squares. The author examined these tables and reached certain conclusions and opinions. These opinions and conclusions formed the basis for this practicum report.

The tables which were generated include high-risk groups by persistence/non-persistence, and general population by persistence/non-persistence. If the Chi-Square exceeded 3.84, the Null Hypotheses was rejected. The results are displayed in the report in the form of tables.

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DATA RESULTING FROM THE STUDY

Most of the students in the sample were female.

Table 1

Distribution of the Sample Population by Sex

Sex	Percent	Number
Female	53.97	136
Male	46.03	116

The largest group of students was in the age group that was under twenty years of age.

Table 2

Distribution of the Sample Population by Age

Age	Percent	Number
20 or less	45.24	114
21 through 25	21.03	53
26 through 30	11.11	28
31 through 35	7.54	19
36 through 40	3.97	10
41 and over	5.95	15
Unknown	5.16	13

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Most of the students in the sample were in career majors.

Table 3

Distribution of the Sample Population by Major

Major	Percent	Number
Career	61.51	155
Non-career	38.49	97

Approximately one out of four students changed their major during their first year of study.

Table 4

Did the Student Change Majors During the First Year of Enrollment?

Changed?	Percent	Number
Yes	24.21	61
No	75.79	191

Most of the students in the sample were full-time at the time of their initial enrollment. (Table 5). The largest number of students in the sample enrolled for only one quarter. (Table 6).

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Table 5

Full-time or Part-time At Initial Enrollment

Status	Percent	Number
Full-time	55.16	139
Part-time	44.84	113

Table 6

Number of Quarters Registered

Quarters	Percent	Number
1	30.56	77
2	11.51	29
3	14.29	36
4	13.89	35
5	5.16	13
6	6.35	16
7	5.16	13
8	3.97	10
9 or more	9.13	23

Most of the students did not drop classes without adding a corresponding number of credit hours. (Table 7).

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Table 7

Did the Student Drop Classes Without Adding Equivalant Credit Hours?

Dropped Classes	Percent	Number
Yes	42.07	106
No	57.94	146

The largest catagory of students in the sample was the catagory which was described as the general student population.

Table 8

Percent by Catagory

Catagory	Number	Percent
Female, non-career major, Part-time, and thirty Years old or older.....	4	1.59
Students who dropped classes Without adding equivalant Credit hours.....	105	43.25
Students who changed their Major during their first Year of enrollment.....	23	9.13
The general student Population, not in Above groups.....	120	47.62

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More than two out of three students were in the group that was described as non-persisters.

Table 9

Persister or Non-persister

Catagory	Percent	Number
Persister	30.16	76
Non-persister	69.84	176

The group which had the highest rate of persistence was the group: females, part-time, non-career majors, and were thirty years old or older. The Chi-Square for this table was 1.364 with 3 degrees of freedom.

Table 10

Persistence by Catagory

Catagory	Persisted	Did Not Persist	Number
Female, non-career major, Part-time, thirty years Old or older.....	50.00%	50.00%	4
Students who dropped classes Without adding equivalant Credit hours.....	32.38%	67.62%	105
Students who changed their Major during their first Year of enrollment.....	26.09%	73.91%	23
The general student Population.....	28.33%	71.67%	120

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Both full-time and part-time student catagories had a majority of students who were non-persisters. The Chi-Square for this table was 34.386 with 2 degrees of freedom.

Table 11

Persistence by Full-time or Part-time

Status	Persisters	Non-persisters	Number
Full-time	44.60%	55.40%	139
Part-time	11.61%	88.39%	113

The age group with the highest percentage of persisters was that of 20 or less, while the age group with the lowest percentage of persisters was that of 36 through 40. The Chi-Square for this table was 19.504 with 6 degrees of freedom. (Table 12). The data revealed that male students were more likely to change their major than were female students. The Chi-Square for this table was .015 with 1 degree of freedom. (Table 13). The data also indicated that male students were more likely to withdraw from classes at a higher rate than were female students. The Chi-Square for this table was 5.652 with 1 degree of freedom. (Table 14).

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Table 12

Age by Persistence

Age	Persisters (In Percent)	Non-persisters (In Percent)	Number
20 or less	42.98	57.02	114
21 through 25	26.42	73.58	53
26 through 30	10.71	89.29	28
31 through 35	15.79	84.21	19
36 through 40	10.00	90.00	10
41 and over	26.67	84.62	15
Unknown	15.38	84.62	13

Table 13

Sex by Did The Student Change Majors?

Sex	Percent of students who changed their major	Percent of students who did not change their major	Number
Female	23.53	76.47	136
Male	25.00	75.00	116

The data indicated that the age group 20 or less had the highest percentage of students who dropped classes without adding equivilant number of credit hours. The data further indicated that the percentage of students who did withdraw in this manner declined in each age group until

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the lowest percentage was indicated in the 35 through 40 age group. The Chi-Square for this table was 15.554 with 6 degrees of freedom. (Table 15).

Table 14

Sex by Did The Student Drop Classes Without Adding Equivalant Credit Hours?

Sex	Percent of students who did drop classes without adding equivalant hours	Percent of students who did not drop classes without adding equivalant hours	Number
Female	41.91	58.09	132
Male	42.24	57.76	116

While one out of three career major students persisted, less than one out of ten non-career major students persisted. (Table 16). Of those persisting, 77.63% were in career majors, while the non-persisters were nearly evenly split between persisters and non-persisters. (Table 17). The Chi-square for both of these tables was 10.994 with 1 degree of freedom. Sex was not a statistically significant factor in persistence or non-persistence of students. The Chi-square for this table was .921 with 1 degree of freedom. (Table 18).

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Table 15

Age by Did the Student Drop Classes Without Adding Equivalant credit hours?

Age	Percent of student who did drop classes without adding equivalant hours	Percent of students who did not drop classes without adding equivalant hours	Number
20 or less	52.63	47.37	114
21 through 25	43.40	56.60	53
26 through 30	35.71	64.29	28
31 through 35	26.32	73.68	19
36 through 40	10.00	90.00	10
41 and over	20.00	80.00	15
Unknown	30.00	70.00	13

Table 16

Major by Persisted

Major	Persisted	Non-persisted	Number
Career Major	38.63%	61.94%	155
Non-career Major	17.53%	82.47%	97

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Table 17

Persisters by Major

Status	Career Majors	Non-career Majors	Number
Persisters	77.63%	54.55%	76
Non-persisters	22.37%	45.45%	176

Table 18

Sex by Persistence

Sex	Persisted	Non-persisted	Number
Female	33.09%	66.91%	136
Male	26.72%	73.28%	116

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SIGNIFICANCE OF THE DATA

Examination of the data as displayed in Table 10 indicates that Null Hypotheses 1, 2 and 3 should be accepted. The Hypotheses 1, 2 and 3 should be rejected. Therefore, it would be logical to conclude that the student groups which had been identified as "high-risk" do not seem to be at any greater risk of becoming non-persisters than the general student population.

The data indicates that Kirkwood Community College experiences an attrition rate of over 70%. The percentage is drawn from those students who enroll for their first quarter of their academic program, and have dropped out by the end of the fourth quarter. The point at which most students become non-persisters is during the first quarter. Over 31% of students who begin an educational program at Kirkwood do not register for the second quarter. The majority of the non-persisters are part-time students - 56%. (Table 5).

A significant finding was that over 80% of the persisting students are full-time students. This would tend to indicate that if College administrators are concerned about attrition, they should be paying attention to the part-time students. This may not prove to be cost-effective, and it may be necessary to acknowledge

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that there will be attrition, but there are acceptable levels and types of attrition. If the personnel at the College can reduce the attrition of full-time students to a level "less than 20%" which it was during this research, it may be more beneficial to the College than reducing the attrition of part-time students, in terms of Full-time equivilant enrollment reimbursement from the state.

If, on the other hand, the College truly seeks to serve the community, it should devote more energy to the needs of the part-time student. It should be noted that transfer students are not tracked, and students with short term goals, less than a certificate, diploma or degree, are not adequately identified. It may be that the College adminstrators who are concerned with attrition are expending a great deal of psychic energy on a problem that is not really significant.

It would seem that the need for further research in this area is called for, and that that research should focus on part-time students and their goals. Additionally, it would be helpful to track students who transfer to other institutions without having received an award from Kirkwood Communty College. With the information which this additional research may provide, the administrators who are concerned with the causes of attrition may find that they need not be, or that it is at an acceptable level for legitimate reasons.

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A final observation is that one of the causes of attrition may be that the students perceive that nobody appears to care whether they stay or leave, so they choose to leave, and nobody asks them, "why?"

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APPENDIX A

Code Book For Practicum

Question #1 - What is the student's sex?

1 = Female

2 = Male

Question #2 - What was the student's age at the time of initial enrollment?

1 = 20 or less

2 = 21 through 25

3 = 26 through 30

4 = 31 through 35

5 = 36 through 40

6 = 41 and over

7 = Unknown

Question #3 - What was the student's major at the time of the initial enrollment?

1 = Career major

2 = Non-career major

Question #4 - Did the student change majors during the first 45 credit hours of enrollment?

1 = Yes

2 = No

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Question #5 - How many quarters was the student registered?

1 = 1

2 = 2

3 = 3, etc. through 8,

then 9 = 9 or more.

Question #6 - Was the student full-time or part-time at the time of initial enrollment?

1 = Full time (12 credit hours or more)

2 = Part time (11 credit hours or less)

Question #7 - Did the student drop classes without adding equivalant quarter credit hours?

1 = Yes

2 = No

Question #8 - To which group does the student belong?

1 = Female, non-career-major, part-time, and thirty years old or older.

2 = Students who dropped classes without adding equivalant credit hours.

3 = Students who changed their major during the first year of enrollment (45 credit hours)

4 = The general student population - none of the above groups.

Question #9 - Is the student a persister, or a non-persister?

1 = Persister

2 = Non-persister

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APPENDIX B

MAJORS

CODE	MAJOR
10145	Accounting
10148	Communications Media and Technology
10133	Community Correction Associate
10131	Education Careers Program
10137	English As a Second Language (ESL)
10132	Fire Science
10137	Fisheries and Wildlife Biology
10141	General Studies
10136	Handicapped Services
10138	Human Services
10134	International Trade and Marketing
10103	Law Enforcement
10135	Legal Assistant
10104	Liberal Arts
10144	Management Development
10151	Marketing
10106	Medical Technology
10139	Other
10143	Physical Education
10108	Physical Therapy
10109	Pre-Agricultural Science
10110	Banking and Finance
10111	Pre-Business Administration
10112	Pre-Commercial Art
10114	Pre-Dentistry
10115	Pre-Engineering
10149	Pre-Environmental Science and Forestry
10116	Pre-Forestry
10117	Pre-Government Service
10118	Pre-Historical Science
10119	Pre-Insurance
10120	Pre-Law
10121	Pre-Medicine
10122	Pre-Music
10123	Pre-Nursing
10124	Pre-Pharmacy
10125	Pre-Professional Art
10126	Pre-Social Services
10130	Pre-Veterinary Medicine
10147	Purchasing
10142	Recreation
10140	Undecided

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